

# East Africa's Herders Buy Policies for Survival

The drylands of East Africa are home to millions of pastoralists, herders who move from place to place in search of water and pasture for their livestock. Drought years are tough for these families, who depend on their animals — cows, goats, sheep and camels — for food and income. In a drought, pasture and water become hard to find and the livestock can weaken and die.

Traditionally, pastoralists have coped with the threat of drought by keeping mobile and by sharing grazing areas. Recently, they have started replacing cows with camels and goats, which are more likely to survive as water becomes scarce.

Now, climate change is making matters worse. Seasonal rains are becoming less predictable and droughts more frequent and more severe. And with climate change, pastoralists have less time to rebuild their herds between dry spells. This leaves them vulnerable. Subsequent droughts could threaten their survival.

In 2008, the U.S. Agency for International Development (USAID) began to support programs that help East African pastoralists recover from the loss of livestock because of drought. One program developed index-based livestock insurance (IBLI), which was first sold in northern Kenya in 2010 and in southern Ethiopia in 2012.

IBLI was developed by the International Livestock Research Institute campus in Nairobi, Kenya, in collaboration with researchers from Cornell University and the University of California, Davis. The insurance has the potential to transform vulnerable pastoralists into resilient, vibrant market participants with high growth potential, USAID says.

"Without insurance, herders' families have little protection against the hunger and poverty that can come as a result of a significant drought," says Andrew Mude, a researcher with the International Livestock Research Institute campus in Addis Ababa, Ethiopia. "Livestock that does not perish in the drought is often sold at rock-bottom prices, just so families can survive," he said.

The insurance program relies on NASA satellite data that shows the health of local vegetation based on ground cover. Where images show that vegetation is becoming brown, livestock are dying.

Insurance contracts are issued by local companies that often collaborate with microfinance institutions and suppliers. Pastoralists decide how many animals they want to insure. Prices are affordable but vary from place to place.

## **SEEING RESULTS**

"Pastoralists who heard about the livestock insurance were keen to understand it," said Birhanu Tadesse, Ethiopia project coordinator with the International Livestock Research Institute. Some of those who bought insurance early in the program have already experienced its benefits.

In 2011, a serious drought hit the Horn of Africa, causing devastating losses across the region. But nearly 600 pastoralists in Kenya who were insured received cash payouts.

The insurance protected this vulnerable population against negative coping strategies. “I benefited from the insurance, and that motivated me to buy it again this year,” said pastoralist Guyo Jarso Guyo.

**Photo credit: USAID**

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## **Satellites Show Drought May Put Stress on Congo Rain Forest**

*The following is based on an article originally published April 23 on the NASA website.*

A new analysis of NASA satellite data shows that Africa’s Congo rain forest has undergone a large-scale decline in greenness over the past decade.

The study, led by Liming Zhou, shows that between 2000 and 2012, the decline affected an increasing amount of forest area. The research, published April 23 in the magazine *Nature*, is one of the most comprehensive observational studies to explore the effects of long-term drought on the Congo rain forest using independent satellite sensors.

“Most climate models predict tropical forests may be under stress due to increasing severe water shortages in a warmer and drier 21st-century climate,” Zhou said.

Scientists use satellite images showing the vegetation “greenness” of forests as one indicator of the area’s health. The measure of greenness is developed from data produced by a resolution imaging instrument on NASA’s Terra satellite. Scientists focused their analysis on intact, forested regions in the Congo Basin during the months of April, May and June each year — the first of the area’s two peak rainy and growing seasons.

The study found a gradually decreasing trend in Congo rain forest greenness, sometimes referred to as “browning.” The browning of the forest canopy is consistent with observed decreases in the amount of water available to plants, whether in the form of rainfall, groundwater, water in near-surface soils or water within the vegetation. Scientists say that a continued drying trend could alter the composition of the Congo rain forest, affecting its biodiversity and carbon storage.

Climate factors known to affect vegetation growth were in line with the observed browning. Land surface temperatures, for example, were observed to increase over most of the study area. Decreased cloudiness allowed more solar radiation to reach the plants, an action that typically promotes photosynthesis. But in this case, it likely posed an extra stress on the plants from the depletion of soil moisture.

“Forests of the Congo Basin are known to be resilient to moderate climate change because they have been exposed to dry conditions. However, the recent climate anomalies as a result of climate change

and warming of the Atlantic Ocean have created severe droughts in the tropics, causing major impacts on forests,” said researcher Sassan Saatchi.

How the changes affect individual plant species remains to be seen. One possibility is that drier conditions may favor deciduous trees at the expense of evergreen trees.

“Our assessment is a step toward an improved understanding of how African rain forests respond to increasing drought,” Zhou said. “We need to consider the complex range of processes affecting different tropical rain forest species before we can fully assess the future resilience of tropical forests.”

**Photo credit: NASA**

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## **New Technologies Monitor Congo Forests**

*The following is based on an article that appeared in the November/December 2013 issue of the U.S. Agency for International Development’s (USAID’s) Frontlines.*

A satellite observatory is on its way to becoming a forest monitoring center of excellence in the Congo Basin region.

Over the past decade, new technologies, including remote sensing and geographic information systems (GIS), have emerged as powerful tools in forest monitoring that can provide critical information about how to protect this valued natural resource.

Remote sensing consists of taking images from satellites over an area ranging from a few square kilometers to the entire globe. GIS integrates hardware, software and data for capturing, managing, analyzing and displaying various forms of geographically referenced information. The technologies have enabled researchers to monitor remote areas not accessible in the past.

USAID has helped bring these technologies to the Congo Basin. After environment ministers from Central African nations decided in 2000 to create a Congo area watchdog organization — called the Central African Forest Satellite Observatory — USAID provided training in field data collection at the University of Kinshasa to people who live in the region.

Between 2005 and 2013, the observatory trained more than 1,500 people in the region in GIS and remote sensing applications, and it is expanding its capacity-building efforts in other Central African countries, USAID said.

The observatory aims to support improved management of natural resources and sustainable development by producing reliable forest-cover change information and building the capacity of public and private conservation partners to use the latest satellite-based tools.

“For many years, the Congo Basin was behind in using scientific data from satellites to monitor the environment, especially the forest-cover change. But now we have built local capacity that can manipulate information from NASA and other cutting-edge sources and publish information products in leading environmental journals,” said Landing Mané, the group’s director.

The published information helps conservation workers better understand and develop suitable programming “that addresses deforestation and forest degradation in the long term,” noted Karl Wurster, a natural resources specialist.

The forests harbor threatened and globally important biodiversity and are a source of food, medicine, materials, fuel and shelter for millions of people.

**Photo credit: USAID**

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